MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

MCC1013 – COMPUTER MODELLING

(All Sections / Groups)

11 OCTOBER 2016
2.30 PM – 4.30 PM
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of FOUR pages including the cover page.
2. There are **TWO** sections in this paper. Please answer **ALL** questions in Section A and answer only **TWO** out of FOUR questions in Section B. Every answer in Section A carries 3 marks while in Section B each question carries 20 marks.
3. Please print all your answers on the answer booklet provided.

SECTION A *(every answer carries 3 marks, please print your answer on the answer booklet provided)*

1. 2D refers to the two dimensional screen output of graphic images and 3D is three dimensional objects which exist only in the memory of the computer. They do not exist outside the computer and have no physical form - they are just a bunch of _____ and _____.

2. _____ is the first modelled 3d object in history was done by Martin Newell, a computer scientist. He sketched on a graph paper with pencil. Next, the sketch was brought to the lab and modeled with _____ storage tube since there were no 3D packages then.

3. 3D graphics output for still image rendering are in the format listed below:
   - _____
   - _____
   - _____
   - _____

4. **VRML** which stands for _____ _____ _____ _____ is one of the well-known formats for navigating 3D objects on the web. It is the first technology for 3D web navigation.

5. The position of 3D vertex is given three numeric values of _____, _____ and _____. 3D space also consists of three imaginary lines which defines direction. These lines are called _____.

6. There are three types of clones:
   - A **copy** is a simple _____ and they are not linked in any way.
   - An _____ of an object means that modifying one would modify the other.
   - A _____ is a _____ between the two. If any parameters within the modify stack of either the clone or the original is changed, changes would be duplicated. If modifiers are added to the original, this would also be applied to the reference. However, if modifiers are added to the clone, the original is NOT affected. Basically, the clone is a reference to the original.

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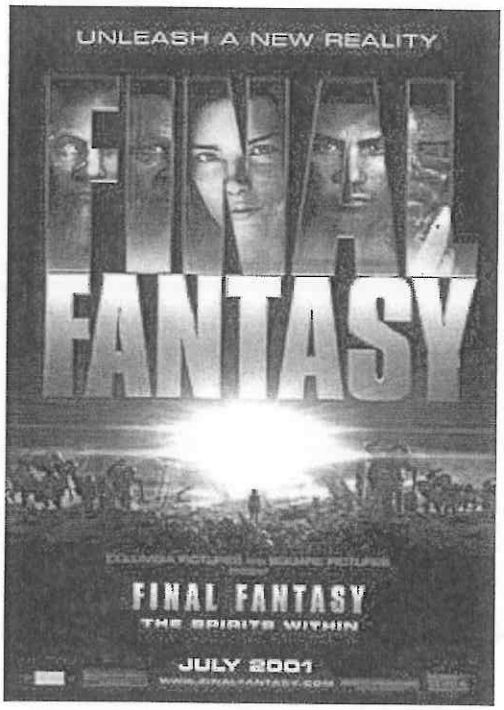
SECTION B

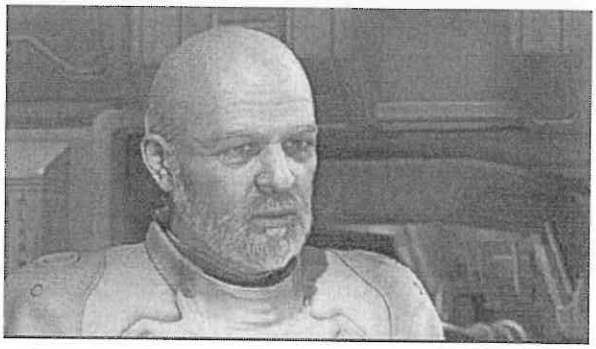
*Question number 1, 2, 3, 4 are based on this statement below. Please answer **TWO** questions ONLY. Each question carries 20 marks.*

The Problem

Final Fantasy: The Spirits Within is an American CGI animated science fiction film directed by Hironobu Sakaguchi, the creator of the popular Final Fantasy series of role-playing video games back in 2001. It was the first photorealistic computer-animated feature film and remains the most expensive video game-inspired film of all time. Peter Bradshaw, a British writer and film critic, gave a negative review about the movie, stating that even though the animation was brilliant, the sadly realist human faces look quite phony because "they are almost there but not quite".

If looking realistic alone is not the key to the success of this film, let us discuss about the photorealistic rendering principles and other technical parts in this movie and see how this film could be improved.





1. Please discuss what you understand about photorealism and give some examples based on the movie Final Fantasy above. (20 marks)

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2. There are 10 principles of photorealism. Please name all of them and explain in details about **surface texture** and **flaws, scratches and dings** that you think can be improved in this film. (20 marks)

3. Some of the textures used in this film might be using **procedural textures**. Please explain what procedural textures are and also please explain the pros and cons of using procedural versus image textures. (20 marks)

4. At present, to achieve realism, a lot of contemporary lighting techniques can be applied in this movie including photometric lighting. Please explain what photometric lighting is and give **four** examples of this type of light. (20 marks)

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